

Parasitic infestation of lung: An unusual cause of interstitial pneumonitis

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ABSTRACT

Parasite infections are increasing worldwide due to increasing migration and traveling. Parasitic infections can affect lungs and present as a focal or diffuse lung diseases. High index of suspicion and detailed history are most important. We present a case of interstitial pneumonitis caused by parasite infestation, which was diagnosed on transbronchial lung biopsy.

KEY WORDS: Interstitial pneumonitis, parasitic infestation, transbronchial lung biopsy

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INTRODUCTION

Parasitic infections are increasing worldwide due to rapid urbanization of cities, global warming, and international traveling.^[1] It can affect respiratory system in a variety of ways. The diagnosis of parasitic diseases of the respiratory system is challenging because clinical manifestation and radiological findings are not specific. Thus high index of suspicion and detailed history including traveling history are critical. Parasite can affect airways during both larval and mature adult phases. The larvae can cause airway inflammation, whereas migration of the mature adult worm may cause mechanical obstruction.^[2] We present a case of interstitial pneumonitis caused by parasitic infestation, which was diagnosed on transbronchial lung biopsy (TBLB).

CASE REPORT

A 54-year-old female presented with a history of exertional breathlessness and dry cough for two months.

She was afebrile with SpO₂ of 91% on room air and bilateral crepitations on respiratory examination. Chest radiography showed bilateral reticular nodular opacities in upper and mid zones. Lung function test revealed severe restrictive abnormality with FEV1 of 1.2 L (46.4%), FVC of 1.45 L (45.2%), and FEV1/FVC 83% with reduction in DLCO 1.46 mmol/min/kPa (18%) and corrected value with alveolar volume 0.49 mmol/min/kPa (30%). Six-minute walk distance was 170 m and lowest oxygen saturation was 74%. High-resolution computed tomography (HRCT) of chest showed multiple ill-defined nodular opacities in both lung fields showing centrilobular distribution associated with ground glass opacities bilaterally. Fine reticular densities were seen at places with segments of traction bronchiectasis [Figure 1]. Provisional clinical diagnosis was interstitial lung disease and possible hypersensitivity pneumonitis. Routine complete blood count and biochemistry were normal. Connective tissue markers were negative (RA, Anti-CCP, ANA). Total serum IgE was 145 IU/mL and specific IgE for pigeon droppings (<0.10 k/U) was negative. TBLB showed thickened

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alveolar septa with mild lymphoplasmacytic inflammatory infiltrate in the interstitium with cross-sections of calcified parasitic larvae with foreign body giant cell reaction around it [Figure 2]. Travel history revealed frequent travels in the Himalayan belts yearly for 20 years during which she had frequent episodes of diarrhea. Stool examination did not show any ova or cyst or trophozoites. She was given albendazole 400 mg for three days and oral corticosteroids for 12 weeks. Bronchoalveolar lavage (BAL) for tuberculosis culture at 6 weeks was negative. At 6 weeks follow up, she had remarkable clinical improvement with SpO₂ 95% at rest. HRCT chest also showed remarkable improvement after 4 months [Figure 3].

DISCUSSION

Nematodes, trematodes, and cestodes all can affect respiratory system in different ways. Parasitic infections can present as focal or diffuse lung diseases. Diffuse lung diseases can be further divided into transient pulmonary infiltrates and alveolar or interstitial lung diseases.^[3] Ascariasis, Anchylostomiasis, and Toxocariasis usually cause transient pulmonary infiltrates, whereas Schistosomiasis, Strongyloidiasis, and Tropical pulmonary eosinophilia can cause diffuse interstitial changes, as in the current case.^[3]

Strongyloidiasis causes reticulonodular opacities because of secondary infection, hemorrhage, inflammatory pneumonitis, and bacterial abscess formation.^[4,5] A rare manifestation of pulmonary strongyloidiasis includes granulomatous changes leading to pulmonary fibrosis.^[6] Schistosomiasis eggs that are not passed into bladder or intestinal lumen are the main cause of chronic lung diseases causing granulomatous reaction and fibrosis.^[3] Tropical pulmonary eosinophilia typically results from a hypersensitivity reaction to *Wuchereria bancrofti* and *Brugia malayi*. Tropical pulmonary eosinophilia is an immunological response to microfilariae rather than acute infection, which usually present as reticulonodular opacities.^[3]

The diagnosis of parasitic infections is difficult on chest radiography or HRCT of chest because of nonspecific presentations. It requires high index of suspicion and detailed history including traveling. Bronchoscopy may be helpful for diagnosis of parasitic infestation by variety of ways like direct visualization, BAL, brushing, and TBLB. BAL fluid may reveal eosinophilia with or without parasites.^[2] TBLB or brushing can also identify parasitic larvae in the lung.^[2] Parasitic lung diseases can also show microscopic pulmonary calcification on lung biopsy.^[7] In the current report, transbronchial lung biopsy revealed thickened alveolar septa with mild lymphoplasmacytic inflammatory infiltrate in the interstitium with cross-sections of calcified

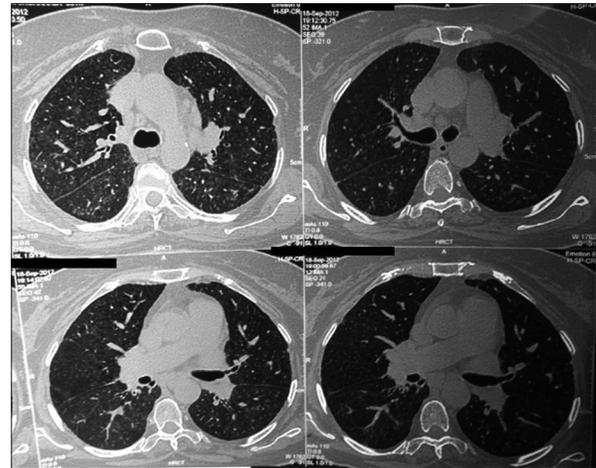


Figure 1: High-resolution computed tomography chest showing multiple ill-defined centrilobular opacities with ground glass opacities bilaterally before treatment

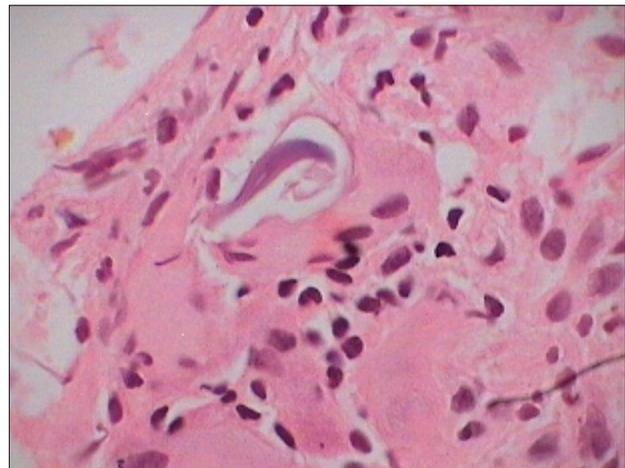


Figure 2: Histopathology image of transbronchial lung biopsy showing calcified larva with thickened alveolar septa with mild lymphoplasmacytic inflammatory infiltrate in the interstitium

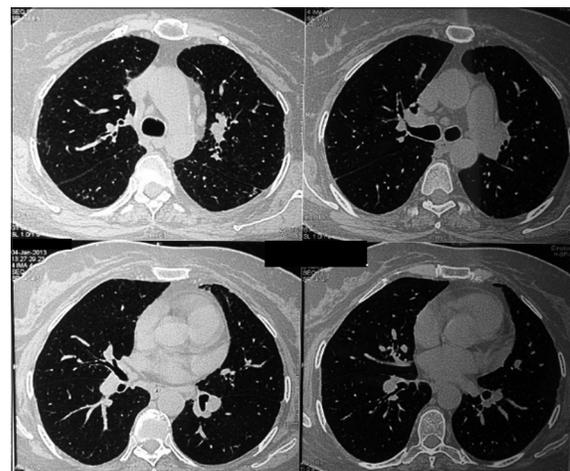


Figure 3: High-resolution computed tomography chest showing remarkable improvement after treatment

parasitic larvae. Thus, highlighting the utility of TBLB in undiagnosed diffuse lung infiltrates.

TBLB is performed for obtaining tissue specimen from peripheral lung masses and focal or diffuse lung infiltrates. The technique is useful in patients with suspected lung cancer, fungal and mycobacterial lung infections, unexplained infiltrates in immunocompromised hosts and in patients with suspected pulmonary sarcoidosis, lymphangitic carcinomatosis, and in selected cases of pulmonary Langerhan's cell histiocytosis, lymphangioleiomyomatosis, and cryptogenic organizing pneumonia.^[8]

CONCLUSION

With increasing travels and worldwide migration, parasitic infections should be considered in differential diagnosis of interstitial lung diseases particularly in the evaluation of diffuse lung infiltrates. Bronchoscopy and transbronchial lung biopsy can be useful in the diagnosis of diffuse lung infiltrates.

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Conflicts of interest

There are no conflicts of interest.

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